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PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional)																		
<p>I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]</p> <p>on <u>May 15, 2006</u></p> <p>Signature <u><i>Lynda Howell</i></u></p> <p>Typed or printed name <u>Lynda Howell</u></p>		Application Number	Filed																	
		09/683,621	January 25, 2002																	
		First Named Inventor																		
		Abdalmajeid Musa Alyassin																		
		Art Unit	Examiner																	
		2625	Seyed H. Azarian																	
<p>Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.</p> <p>This request is being filed with a notice of appeal.</p> <p>The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.</p> <p>I am the</p> <table border="0"><tr><td><input type="checkbox"/> applicant/inventor.</td><td><u><i>79</i></u></td></tr><tr><td><input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)</td><td>Signature</td></tr><tr><td><input checked="" type="checkbox"/> attorney or agent of record.</td><td>Patrick S. Yoder</td></tr><tr><td>Registration number <u>37,479</u></td><td>Typed or printed name</td></tr><tr><td><input type="checkbox"/> attorney or agent acting under 37 CFR 1.34.</td><td>(281) 970-4545</td></tr><tr><td>Registration number if acting under 37 CFR 1.34 _____</td><td>Telephone number</td></tr><tr><td></td><td>May 15, 2006</td></tr><tr><td></td><td>Date</td></tr></table> <p>NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.</p> <table border="1"><tr><td><input checked="" type="checkbox"/> *Total of <u>1</u> forms are submitted.</td></tr></table>				<input type="checkbox"/> applicant/inventor.	<u><i>79</i></u>	<input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)	Signature	<input checked="" type="checkbox"/> attorney or agent of record.	Patrick S. Yoder	Registration number <u>37,479</u>	Typed or printed name	<input type="checkbox"/> attorney or agent acting under 37 CFR 1.34.	(281) 970-4545	Registration number if acting under 37 CFR 1.34 _____	Telephone number		May 15, 2006		Date	<input checked="" type="checkbox"/> *Total of <u>1</u> forms are submitted.
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This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:
Abdalmajeid Musa Alyassin et al.

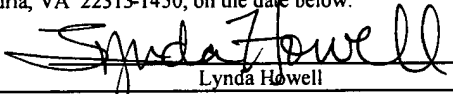
Serial No.: 09/683,621

Filed: January 25, 2002

For: METHOD AND SYSTEM FOR
SEGMENTING MAGNETIC
RESONANCE IMAGES

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§
§ Group Art Unit: 2625
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§ Examiner: Seyed H. Azarian
§
§
§ Atty. Docket: RD29513-1/YOD
§ GERD:0521
§

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May 15, 2006	
Date	Lynda Howell

PRE-APPEAL BRIEF REQUEST FOR REVIEW

In respect to the Final Office Action of February 14, 2006, Appellants respectfully submit this Pre-Appeal Brief Request for Review. This Request is being filed concurrently with a Notice of Appeal.

In the Final Office Action mailed on February 14, 2006, the Examiner rejected all of pending claims 1-19 under 35 U.S.C. §103(a).

Rejections Under 35 U.S.C. § 103(a)

Claims 1-5, 8-9, and 11-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Gosche, U.S. Patent No. 6,430,430, in view of Teboul, U.S. Patent No. 5,709,206. Claims 6-7, 10 and 17-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Gosche in view of Udupa, U.S. Patent No. 5,812,691. Rejected claims 1, 8, 12 and 17 are independent and will be discussed in detail below.

Independent claim 1 recites *classifying a plurality of selected structures based on a plurality of image processing computations relating respective T2 relaxation times corresponding to each of the structures, and segmenting the MR images for each of the structures substantially concurrently based on the plurality of image computations.* Independent claim 8 recites *computing a plurality of image processing computations relating respective T2 relaxation times corresponding to each of a plurality of selected structures within the brain and segmenting the MR images for each of the structures substantially concurrently based on the plurality of image computations.* Independent claim 12 recites *a processor adapted to perform concurrent segmentation computations for a plurality of selected structures.*

Appellants respectfully submit that, in the present application, the selected structures within the body of interest (e.g., the brain) are classified and/or segmented based on image processing computations relating respective T2 relaxation times corresponding to each of the structures. The application discloses that the T2 value is useful in distinguishing selected tissue types in a MR image since there is a T2 value associated with a given tissue type or brain structure. Further, the given T2 value may be visualized differently between dual echo images. Each of the image processing computations defined in the present application such as a scatter plot (SP), a T2 radial histogram (RH), a T2 median filter, and a dual echo MIP filter is based on T2 values and other information relating to T2. Further, Appellants respectfully submit that the MR images for each of the structures are segmented substantially concurrently based on the plurality of image computations, thereby reducing the image processing time.

Gosche simply discloses standard data acquisition techniques for MRI such as proton density weighted ("PDw") data acquisition, a spin-lattice relaxation time ("T1s") data acquisition, and/or a spin-spin relaxation time ("T2w") data acquisition. *See*, column 50, lines 37-48, cited by the Examiner. Additionally, Gosche discloses segmentation and/or classification techniques based on one or more "knowledge rules". *See*, column

49, line 45-column 50, line 2, cited by the Examiner. *However, Gosche fails to disclose that such classification and/or segmentation can be done based on T2 relaxation times.* There is no basis whatsoever to conclude that the “knowledge rules” should or could be based on T2 relaxation times.

In the Final Office Action, the Examiner rebutted Appellants’ position by arguing that “knowledge based rules” refer to KGHID (knowledge guided hyper intensity detection) that uses encoded knowledge of brain anatomy and MRI characteristics of individual tissues. The Examiner further stated that the method requires no more than a segmentation of brain tissues and that the KGHID is able to identify sub cortical structures and hyper intense lesions based on these tissue classes. *See*, column 9, lines 27-42, cited by the Examiner.

The Appellants respectfully assert that *the encoded knowledge of “brain anatomy” and “MRI characteristics” is not same as T2 relaxation times.* Thus, the use of encoded knowledge of brain anatomy and MRI characteristics of individual tissues via KGHID does not provide any basis to conclude that the “knowledge rules” should or could be based on T2 relaxation times.

Further, the Examiner recognized that Gosche fails to disclose concurrent segmentation of MR images. However, the Examiner argued that Teboul in same field teaches making a plurality of transaxial ductal ultrasound scan images over longitudinal duct segment, and displaying them concurrently. *Appellants respectfully assert that the step of displaying the plurality of axial ductal images substantially concurrently is not same as the step of segmenting the MR images for each of the structures substantially concurrently based on the plurality of image computations.* Segmentation and display are simply two entirely different processes, and cannot be compared or analogized as the Examiner would do.

In summary, as discussed above, the Gosche reference fails to disclose classification and/or segmentation based on T2 relaxation times. Further, the Gosche reference fails to disclose concurrent segmentation of MR images for a plurality of selected structures. Appellants further note that Teboul and Udupa fail to obviate these deficiencies in the teachings of Gosche. Hence Gosche, Teboul and Udupa, alone or in combination, do not teach, suggest or disclose each and every aspect of the invention as recited in the independent claims 1, 8 and 12. The references therefore cannot support a *prima facie* case of obviousness of claims 1, 8 and 12.

Independent claim 17 recites *a method for filtering dual echo images acquired by MR imaging. The method includes selecting a desired echo, implementing a maximum intensity projection (MIP) on the selected echo, and identifying a spatial location of the implemented MIP. The spatial location is then used to extract values from subsequent echoes.*

The Examiner recognized that Gosche fails to disclose the use of MIP. However, the Examiner argued that Udupa in same field teaches a popular method of visualizing the vessels via 3D renditions created by MIP. Even if this were true, *the references, alone or in combination, fail to teach or suggest use of MIP for filtering dual echo images.* On the contrary, Gosche would lead a person skilled in the art to believe that there is no need to resort to other techniques, such as MIP. Gosche discloses many filtering techniques, such as ANN based filtering, 3D diffusion filtering, 3D anisotropic diffusion filtering for removing artifacts, correcting inhomogeneity and improving signal to noise ratio. Nothing in the reference would lead one skilled in the art, absent the present application, to make the MIP substitution proposed by the Examiner.

Furthermore, Udupa does mention the use of MIP as well as certain MR pulse sequences. However, these are disclosed in completely separate examples and are *never* combined. *See, column 20, line 63-column 21, line 3.* Significantly, this algorithm, *said*

to solve problems with MIP, is not the same algorithm as the one used for MR sequences. See, column 21, line 63-column 22, line 12. Clearly, then, even Udupa does not suggest mixing these techniques, and rather teaches away from such combination.

The Examiner rebutted Appellants' position by arguing that "location of MIP" is a broad limitation, and the claim limitation therefore does not require identifying the exact coordinate of the pixels depicting the MIP. The Examiner further stated that Udupa does identify the location of the MIP in terms of direction. *See, column 20, line 53 – column 21, line 3, and Fig. 3d, cited by the Examiner. Clearly, even if this were true, this do not supply any basis to indicate the use of MIP for filtering dual echo images by selecting a desired echo, implementing a MIP on the selected echo, and identifying a spatial location of the implemented MIP, wherein the spatial location is then used to extract values from subsequent echoes.*

Hence the Gosche and Udupa references, alone or in combination, do not teach, suggest or disclose each and every aspect of the invention as recited in the independent claim 17. The references therefore cannot support a *prima facie* case of obviousness of claim 17.

For all of the above reasons, Appellants respectfully request that the Panel instruct the Examiner to withdraw the outstanding rejections and allow the pending claims.

Respectfully submitted,

Date: 5/15/2006

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